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IN REPLY REFER TO: Joint Interoperability Test Command (JTE) **13 Jan 10**

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Extension of the Special Interoperability Test Certification of Nortel Communication Server (CS) 1000E Software Release 5.0 and Product Enhancement Packages

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008
(c) through (f), see Enclosure

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Nortel CS1000E with Software Release 5.0 is hereinafter referred to as the System Under Test (SUT). The SUT met all of its critical interoperability requirements and is certified as interoperable for joint use within the Defense Switched Network (DSN). The SUT is certified for Voice over Internet Protocol (VoIP) with certified Assured Services Local Area Networks (ASLANs) on the Unified Capabilities (UC) Approved Product List (APL). The listed test discrepancies shown in the SUT Interoperability Test Summary have an overall minor operational impact. The SUT can be deployed with a redundant processor in the High Availability (HA) configuration or with a single call processor in the Standard Availability (SA) configuration. The SUT HA configuration was tested and met the critical interoperability requirements for the following DSN switch types: Small End Office (SMEO), Private Branch Exchange (PBX) 1, and PBX 2. The SUT SA configuration was tested and met the critical interoperability requirements for the following DSN switch types: PBX 1, and PBX 2. No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that could affect interoperability, but no later than three years from the date of the original memorandum (15 January 2008).

3. The extension of this certification is based upon Desktop Review (DTR) 1. The original certification is based on interoperability testing conducted by JITC, DISA adjudication of open test discrepancy reports, review of the vendor's Letters of Compliance (LoC), and Defense Information System Network (DISN) Security Accreditation Working Group (DSAWG) accreditation. Testing was conducted at JITC's Global Information Grid Network Test Facility at Fort Huachuca, Arizona, from 14 January through 29 February 2008. Patches were applied and regression testing was conducted from 21 July through 1 August 2008 and documented in Reference (c). DISA adjudication of outstanding test discrepancy reports and review of the

vendor's LoC was completed on 12 January 2009. DSAWG grants accreditation based on the security testing completed by DISA-led Information Assurance test teams and published in a separate report, Reference (d). DSAWG accreditation was granted on 24 September 2008. The original certification included a four-year certification for interoperability based on Reference (b), which is changed in this DTR to 3 years. This change is based on IA accreditation being limited to three years, and the Office of the Secretary of Defense mandate that special interoperability certifications in accordance with the UCR 2008 be limited to three years. This DTR was requested to include the addition of the 1120SA telephone to the SUT certification. The 1120SA telephone has the same firmware (0624C4D) as the already certified 1120E telephone. This DTR was approved on 19 October 2009. DSAWG accreditation for this DTR was granted on 1 December 2009.

4. The interoperability test summary of the SUT is contained in Table 1. The SMEO required and conditional Capability Requirements (CRs) and Feature Requirements (FRs) are listed in Table 2. This interoperability test status is based on the SUT's ability to meet:

a. DSN services for Network and Applications specified in Reference (e).

b. SMEO interface and signaling requirements for trunks/lines specified in Reference (f) verified through JITC testing and/or vendor submission of LoC.

c. SMEO CRs/FRs specified in Reference (f) verified through JITC testing and/or vendor submission of LoC.

d. The overall system interoperability performance derived from test procedures listed in Reference (g).

Table 1. SUT Interoperability Test Summary

DSN Trunk Interfaces			
Interface & Signaling	**Critical**	**Status**	**Remarks**
T1 CAS (DTMF, DP)	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT recognizes a wink start signal greater than the specified maximum limit.[1] The SUT does not support glare hold resolution for their CAS trunks.[2] The SUT makes three attempts over the trunk when encountering a glare condition on direct route.[3]
T1 CAS (MFR1)	No	Not Tested	T1 CAS (MFR1) is not supported by the SUT. This is not a required interface for a SMEO. There is no risk associated with the SUT not supporting this interface.
E1 CAS (DTMF, DP)	Yes (Europe only)	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT does not support glare hold resolution for their CAS trunks.[2] The on/off hook pulse that frames the preemption signal on the E1 CAS is intermittently out of the required tolerance of 100ms (+/-5ms).[4]
E1 CAS (MFR1)	No	Not Tested	E1 CAS (MFR1) is not supported by the SUT. This is not a required interface for a SMEO. There is no risk associated with the SUT not supporting this interface.
T1 ISDN PRI NI 1/2 (ANSI T1.619a)	Yes	Certified	Met all critical CRs and FRs.
E1 PRI (ITU-T Q.955.3)	No (Europe only)	Certified	Met all critical CRs and FRs.
T1 SS7 (ANSI T1.619a)	No	Not Tested	T1 SS7 is not supported by the SUT. This is not a required interface for a SMEO. There is no risk associated with the SUT not supporting this interface.

E1 SS7 (ANSI T1.619a)	No	Not Tested	E1 SS7 is not supported by the SUT. This is not a required interface for a SMEO. There is no risk associated with the SUT not supporting this interface.

Table 1. SUT Interoperability Test Summary (continued)

DSN Line Interfaces			
Interface & Signaling	**Critical**	**Status**	**Remarks**
2-Wire Analog (GR-506-CORE)	Yes	Certified	Met all critical CRs and FRs with the following minor exception: When a line has been restricted to intra-switch calls only and attempts to make an inter-switch call at ROUTINE precedence, the caller receives an ICA rather than a VCA. If the call is made with a precedence above ROUTINE, the caller receives a BNEA rather than a VCA.[5]
ISDN BRI NI 1/2	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: When a line has been restricted to intra-switch calls only and attempts to make an inter-switch call at ROUTINE precedence, the caller receives an ICA rather than a VCA. If the call is made with a precedence above ROUTINE, the caller receives a BNEA rather than a VCA.[5] The SUT does not support NI2 BRI.[6] The precedence above ROUTINE ringing cadence that the SUT applies to BRI phones does not meet the specifications.[7] The BRI instruments do not support precedence call waiting.[8]
2-Wire Proprietary Digital	No	Certified	Met all critical CRs and FRs with the following minor exception: When a line has been restricted to intra-switch calls only and attempts to make an inter-switch call at ROUTINE precedence, the caller receives an ICA rather than a VCA. If the call is made with a precedence above ROUTINE, the caller receives a BNEA rather than a VCA.[5]
VoIP (ITU-T H.323 Proprietary)	No	Certified	Met all critical CRs and FRs. Precedence call waiting indication is unique on VoIP phones.[9]
Voicemail			
Interface	**Critical**	**Status**	**Remarks**
Voice Messaging System via proprietary high-density serial connection	No	Certified	The SUT met all critical CRs and FRs for voicemail with this interface. The SUT is certified with any Nortel CallPilot on the UC APL which is certified for this interface.
Voice Messaging System 201i card via backplane	No	Certified	The SUT met all critical CRs and FRs for voicemail with this interface. The SUT is certified with any Nortel CallPilot on the UC APL which is certified for this interface.
2-Wire Proprietary Digital	No	Certified	The SUT met all critical CRs and FRs for voicemail with this interface. The SUT is certified with any voicemail device on the UC APL, which is certified with a Nortel Meridian1 M2616 Meridian Business Set digital proprietary interface.
Automated Call Distributor			
Interface	**Critical**	**Status**	**Remarks**
2-Wire Proprietary Digital	No	Certified	The SUT met all critical CRs and FRs for ACD with this interface. The SUT is certified with any ACD on the UC APL, which is certified with a Meridian1 M2616 Meridian Business Set digital proprietary interface.
DSN Features and Capabilities			
Features and Capabilities	**Critical**	**Status**	**Remarks**
Common Features	Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT does not correctly support the call forwarding variable feature.[10] The conference disconnect tone that is provided by the SUT does not meet the specifications.[11]
Attendant	No	Certified	Met all critical CRs and FRs with the following minor exceptions: Stations cannot be classmarked to prohibit the attendant console from performing a busy override to an active call.[12] The attendant console is unable to perform a cut-through operation when one of the phones in the call is a BRI.[13]
Public Safety	Yes	Certified	Met all critical CRs and FRs with the following exception: The SUT cannot perform a tandem call trace of a specified distant office directory number.[14]

Table 1. SUT Interoperability Test Summary (continued)

DSN Features and Capabilities				
Features and Capabilities		**Critical**	**Status**	**Remarks**
Conferencing	Preset	No	Not Tested	Preset conferencing is not supported by the SUT. This is not a required feature for a SMEO. There is no risk associated with the SUT not supporting this feature.
	Meet-me	Yes	Not Tested	Prior to UCR 2007, Meet-me conferencing was conditional for a SMEO. The UCR 2007 changed this feature to required for a SMEO, and the vendor has 18 months (until July 2009) to develop this capability.
	Progressive	No	Certified	Met all critical CRs and FRs for Progressive Conferencing.
Nailed-up Connections		No	Not Tested	This feature is not supported by the SUT. This is not a required feature for a SMEO. There is no risk associated with the SUT not supporting this feature.
DSN Hotline Services		Yes	Certified	Met all critical CRs and FRs with the following minor exception: The SUT does not support a protected hotline specified list.[15]
MLPP		Yes	Certified	Met all critical CRs and FRs with the following minor exceptions: The SUT will not permit a BRI station to be a member of a multiline hunt group.[16] The SUT does not support the loss of Command and Control announcement.[17]
Call Processing		Yes	Certified	Met all critical CRs and FRs.
Network Management		Yes	Certified	Met all critical CRs and FRs with a serial EIA-232 interface.
ISDN Services		Yes	Certified	Met all critical CRs and FRs.
Synchronization		Yes	Certified	Met all critical CRs and FRs.
Reliability		Yes	Certified	Met all critical CRs and FRs. See note 18.
Security		Yes	Certified	See note 19.
VoIP System		No	Certified	The SUT is certified for VoIP with any certified ASLAN posted on the UC APL. See note 20.
Network Gateways				
Gateway	**Interface & Signaling**	**Critical**	**Status**	**Remarks**
PSTN	T1 CAS (DTMF, DP)	Yes	Certified	Met all critical CRs and FRs.
	E1 CAS (DTMF, DP)	No (Europe only)	Certified	Met all critical CRs and FRs.
	T1 ISDN PRI NI 1/2 (ANSI T1.607)	No	Certified	Met all critical CRs and FRs.
	E1 PRI (ITU-T Q.931)	No (Europe only)	Certified	Met all critical CRs and FRs.
	Ground Start Line	Yes	Certified	Met all critical CRs and FRs.
Tactical	T1 CAS (DTMF, DP)	No	Certified	Met all critical CRs and FRs.

NOTES:

1 T1 CAS wink start signals greater than the specified maximum limit are recognized as valid by the SUT. The UCR, section 5.3.3.3.1 and UCR Figure 3-2 define the wink start recognition limits between 100 ms and 350 ms. The SUT recognizes wink start signals from 100 ms to 925 ms in duration. Since all certified switches within the DSN must generate the wink start signal within 140-290 ms, this anomaly has no operational impact.

2 The SUT does not support glare hold resolution on CAS trunks. It only supports glare release. The SUT is a subtending switch off of a MFS and all MFS support glare hold, which complements the SUT's capability to support glare release. Therefore, the operational impact is minor.

3 The SUT makes three attempts over the trunk when encountering a glare condition on direct route. In accordance with the UCR, only two attempts should be made, and the call should then be diverted to the alternate route. This anomaly does not prevent the completion of calls and, therefore, has no operational impact.

4 The on/off hook pulse that initiates the preemption signal on the E1 CAS is intermittently out of the required tolerance of 100 ms (+/-5 ms). The pulse width was measured to be greater than 100 ms (the highest at 128 ms) about 20 percent of the time. Since the sole purpose of this pulse is to define the leading and trailing edge of the 350 ms (+/-5 ms) preempt signal and the preempt signal is not affected, it will never have negative impact on the ability of the SUT to support trunk preemption on E1 CAS. Therefore, this anomaly has no operational impact.

5 When a line has been restricted to intra-switch calls only and attempts to make an inter-switch call at ROUTINE precedence, the caller receives an ICA rather than a VCA. If the call is made with precedence above ROUTINE, the caller receives a BNEA rather than a VCA. This anomaly has a minor operational impact.

Table 1. SUT Interoperability Test Summary (continued)

NOTES (continued):

6 The SUT does not support an NI2 BRI interface. The SUT does support an NI1 BRI interface. The NI2 BRI interface is required for SMEO operation as specified by UCR, section 2.3.3. The primary differences between NI1 and NI2 are supplemental features, which currently are not fielded within the DSN nor are there plans to field them in the future. This anomaly has a minor operational impact.

7 The precedence above ROUTINE ringing cadence that the SUT applies to BRI phones does not meet the specifications as detailed in the UCR, section 5.5.1. The precedence above ROUTINE cadence is distinct from the ROUTINE cadence when it is configured properly; therefore this anomaly has no operational impact.

8 The SUT does not support precedence call waiting for their BRI instruments; however, the SUT does support precedence call waiting for all other phone types. Also, this requirement has been changed from conditional to required in the 2007 UCR and the vendor has 18 months (until July 2009) to develop this feature. The operational impact is minor.

9 The SUT supports the "call waiting" indication on VoIP telephones with visual indicators in lieu of audible tones as specified by the UCR. When call waiting is invoked on a VoIP phone, the phone displays call waiting text along with a flashing symbol. The call waiting symbol flashes twice for a ROUTINE call and three times for precedence above ROUTINE call. Since the requirement for audible tone is conditional, and there are two visual indicators to alert the VoIP user of a waiting call, there is no operational impact.

10 When CFV is assigned to any station on the SUT (except BRI, which does not support CFV) and CFV is invoked by the user, all precedence calls placed to that instrument are forwarded to the DSN or PSTN. Additionally, any station with CFV invoked does not receive a “ping” ring when calls are being forwarded. In accordance with the UCR, only ROUTINE precedence calls will be forwarded and precedence calls above ROUTINE are diverted to the attendant console, night service or alternate directory number. Therefore this feature is not certified by JITC or authorized by the DSN PMO for use within the DSN. This is a new UCR requirement and the vendor has 18 months (until July 2009) to develop this feature.

11 The conference disconnect tone that is provided by the SUT does not meet the specifications designated in UCR, section 5.5.2. The SUT conference disconnect tone is distinguishable from other DSN tones and cadences; therefore, this anomaly has a minor operational impact.

12 Stations cannot be classmarked to prohibit the attendant console from performing a busy override to an active call, as specified in the UCR, section 2.2.4. The proper override tone; however, is given to a station active with a call prior to the attendant’s bridging into the active call. Since attendants rarely bridge into calls and active calls remain connected when an attendant does bridge into a call, the operational impact is minor.

13 The attendant console is unable to perform a cut-through operation when one of the phones in the call is a BRI. This feature works with all other phone types and therefore this anomaly has a minor operational impact.

14 The SUT cannot perform a tandem call trace of a specified distant office directory number as specified in the UCR. Since the SUT is predominately fielded within the DSN as a SMEO with no tandeming (e.g. subtending PBX 1 or PBX 2), this anomaly has a minor operational impact.

15 The SUT will not allow the protection of a hotline call originator through the use of a hotline list as required by the UCR. However, this capability can be accomplished with the SUT by classmarking authorized hotline users for receiving only calls from other hotline callers. The operational impact is minor.

16 The SUT will not permit an ISDN BRI station to be a member of a multi-line hunt group. All other phone types can be configured as members of a multiline hunt group. Since ISDN BRI voice users are rarely used within the DSN and this feature can be accomplished on the SUT with analog and digital proprietary stations, this anomaly has a minor operational impact.

17 The SUT does not support the loss of Command and Control announcement. This announcement is invoked only when a DSN subscriber is automatically routed to a non-MLPP network. This is a new UCR requirement and the vendor has 18 months (until July 2009) to develop this capability.

18 Backup power, power components, UPS requirements, UPS load capacity and alarms are non-testable requirements. It is the responsibility of the respective base/post/camp/station communication agency to provide this with the SUT when installed.

19 Security is tested by DISA-led Information Assurance test teams and published in a separate report, Reference (d).

20 An IPv6 capable system or product, as defined in the UCR, paragraph 1.7, shall be capable of receiving, processing, and forwarding IPv6 packets and/or interfacing with other systems and protocols in manner similar to that of IPv4. IPv6 capability is currently satisfied by a vendor Letter of Compliance signed by the Vice President of their respective company. The vendor stated, in writing, compliance to the following criteria**:**

a. Conformant with IPv6 standards profile contained in the Department of Defense Information Technology Standards Registry (DISR).
b. Maintaining interoperability in heterogeneous environments and with IPv4.
c. Commitment to upgrade as the IPv6 standard evolves.
d. Availability of contractor/vendor IPv6 technical support.

Table 1. SUT Interoperability Test Summary (continued)

LEGEND:

ACD	Automated Call Distributor	FRs	Feature Requirements	NI 1/2	National ISDN Standard 1 or 2
ANSI	American National Standards Institute	GR	Generic Requirement	NI2	National ISDN Standard 2
APL	Approved Products List	GR-506-CORE	LSSGR: Signaling for Analog Interfaces	PBX	Private Branch Exchange
ASLAN	Assured Services Local Area Network	H.323	Standard for multi-media communications on packet-based networks	PMO	Program Management Office
BNEA	Busy Not Equipped Announcement	ICA	Isolated Code Announcement	PRI	Primary Rate Interface
BRI	Basic Rate Interface	IPv4	Internet Protocol version 4	PSTN	Public Switched Telephone Network
CAS	Channel Associated Signaling	IPv6	Internet Protocol version 6	Q.931	Signaling Standard for ISDN
CFV	Call Forwarding Variable	ISDN	Integrated Services Digital Network	Q.955.3	ISDN signaling standard for E1 MLPP
CRs	Capability Requirements	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	SMEO	Small End Office
DISA	Defense Information Systems Agency	JITC	Joint Interoperability Test Command	SS7	Signaling System 7
DP	Dial Pulse	LSSGR	Local Access and Transport Area (LATA) Switching Systems Generic Requirements	SUT	System Under Test
DSN	Defense Switched Network	Mbps	Megabits per second	T1	Digital Transmission Link Level 1 (1.544 Mbps)
DSS1	Digital Subscriber Signaling 1	MFR1	Multifrequency Recommendation 1	T1.607	ISDN – Layer 3 Signaling Specification for Circuit Switched Bearer Service for DSS1
DTMF	Dual Tone Multi-Frequency	MFS	Multifunction Switch	T1.619a	SS7 and ISDN MLPP Signaling Standard for T1
E1	European Basic Multiplex Rate (2.048 Mbps)	MLPP	Multi-Level Precedence and Preemption	TPC	Twisted Pair Copper
EIA	Electronic Industries Alliance	ms	millisecond	UC	Unified Capabilities
EIA-232	Standard for defining the mechanical and electrical characteristics for connecting Data Terminal Equipment (DTE) and Data Circuit-terminating Equipment (DCE) data communications devices	NI1	National ISDN Standard 1	UCR	Unified Capabilities Requirements
				UPS	Uninterruptible Power Supply
				VCA	Vacant Code Announcement
				VoIP	Voice over Internet Protocol

Table 2. SMEO Requirements

DSN Trunk Interfaces				
Interface	**Critical**	**Requirements Required or Conditional**		**References**
T1 SS7 (ANSI T1.619a) E1 SS7 (ITU-T Q.735.3) T1 CAS (MFR1) T1 CAS (DTMF, DP) E1 CAS (MFR1) E1 CAS (DTMF, DP) T1 ISDN PRI NI 1/2 (ANSI T1.619a) E1 ISDN PRI (ITU-T Q.955.3)	No No (Europe only) No Yes No (Europe only) Yes (Europe only) Yes No (Europe Only)	Trunking	• Direct Inward Dialing (C) • National ISDN 1/2 Primary Access (R) • ISDN ANSI MLPP Service Capability (R) • ITU-T ISDN Primary Access (Europe only) (C) • ITU-T ISDN Primary Access Digital Subscriber Signaling System Number 1 MLPP (Europe only) (C) • Normal Wink Start Operations (R) • Glare Operation (R) • Abnormal Wink Start (R) • Glare Resolution (R) • Call for Service Timing (R) • Guard Timing (R) • Satellite Timing (R) • Disconnect Control (R) • Reselect and Retrial (R) • Off-Hook Supervision Transition (R) • Dial-Pulse Signals (R) • DTMF Signaling (R) • Standard Digit Format for Precedence (C) • MFR1 2/6 Signaling (C) • Alerting Signals and Tones (R) • Common Channel Signaling 7 (C) • DSN ISDN User-to-Network Signaling (R) • Application (R) • Physical Layer (R) • Data Link Layer (R) • Data Link Connection (R) • Peer-to-Peer Procedures of Data-Link Layer (R) • Layer 3 DSN User-to-Network Signaling (R) • DSN User-to-Network Signaling for Circuit-Switched Bearer Services (R) • Sequence of Messages for DSN Circuit-Switched Calls (R) • Message Functional Definition and Content (R) • General Message Format and Information Elements Coding (R) • Supplementary Services (C) • PCM-24 Digital Trunk Interface (R) • PCM-30 Digital Trunk Interface (Europe only) (R) • Interoperation of PCM-24 and PCM-30 (R) • Analog Trunk Interface (C) • Integrated Digital Loop Carrier (C) • Local OfficeTest Line (C) • Outside Plant Test Lines (C) • Test Incoming Trunks Tandem or Local State (C) • Manual Test of Trunks (R)	• UCR Section 2.3.2 • UCR Section 2.3.4.1 • UCR Section 2.3.4.1.1 • UCR Section 2.3.4.2 • UCR Section 2.3.4.2.1 • UCR Section 5.3.3.1.1 • UCR Section 5.3.3.1.2 • UCR Section 5.3.3.2.1 • UCR Section 5.3.3.2.2 • UCR Section 5.3.5 • UCR Section 5.3.6 • UCR Section 5.3.7 • UCR Section 5.3.8 • UCR Section 5.3.9 • UCR Section 5.3.10 • UCR Section 5.4.1 • UCR Section 5.4.2 • UCR Section 5.4.2.1 • UCR Section 5.4.3 • UCR Section 5.5 • UCR Section 5.6 • UCR Section 5.7.1 • UCR Section 5.7.1.1 • UCR Section 5.7.1.2 • UCR Section 5.7.1.3 • UCR Section 5.7.1.3.1 • UCR Section 5.7.1.3.2 • UCR Section 5.7.1.4 • UCR Section 5.7.1.4.2 • UCR Section 5.7.1.4.3 • UCR Section 5.7.1.4.4 • UCR Section 5.7.1.4.5 • UCR Section 5.7.1.4.6 • UCR Section 7.1 • UCR Section 7.2 • UCR Section 7.3 • UCR Section 7.4 • UCR Section 7.5 • UCR Section 2.5.1 • UCR Section 2.5.2 • UCR Section 2.5.3 • UCR Section 2.5.4.2

Table 2. SMEO Requirements (continued)

DSN Trunk Interfaces				
Interface	**Critical**	**Requirements Required or Conditional**		**References**
T1 SS7 (ANSI T1.619a) E1 SS7 (ITU-T Q.735.3) T1 CAS (MFR1) T1 CAS (DTMF, DP) E1 CAS (MFR1) E1 CAS (DTMF, DP) T1 ISDN PRI NI 1/2 (ANSI T1.619a) E1 ISDN PRI (ITU-T Q.955.3)	No No (Europe only) No Yes No (Europe only) Yes (Europe only) Yes No (Europe Only)	Trunking continued	• Trunk Group-Remove from Service (R) • Trunk Group-Restore to Service (R) • Carrier Group Alarm (R) • Software Carrier Group Alarm (C)	• UCR Section 2.5.5 • UCR Section 2.5.6 • UCR Section 2.5.7 • UCR Section 2.5.7.1
		Voice	• MOS (R) • Secure calls (R)	• CJCSI 6215.01C • CJCSI 6215.01C
		Facsimile	• Analog: ITU-T T.4 (R)	• DISR
		Data	• Modem (VBD) (R) • 56 kbps switched data (R: PRI only) • 64 kbps switched data (R: PRI only) • NX56 synchronous BER (R: PRI only) • NX64 synchronous BER (R: PRI only) • Secure data (STE/STU-III) (R)	• CJCSI 6215.01C • UCR Section 3.10 • UCR Section 3.10 • UCR Section 3.10 • UCR Section 3.10 • CJCSI 6215.01C
		VTC	• ITU-T H.320 (R: PRI only)	• FTR 1080B-2002
DSN Line Interfaces				
2-Wire Analog ISDN BRI NI 1/2 (ANSI T1.619a) 2W Digital Proprietary VoIP	Yes Yes No No	Access	• Directory Number Identification (R) • PBX Line (C) • National ISDN 1/2 Basic Access (R) • Analog Line (R) • Basic Line Test Capabilities (R) • Advanced Line Test Capabilities (C) • Network Power Systems for External Interfaces (R) • Loop Start Line (R: 2-Wire Analog only) • Reverse Battery (R) • Alerting Signals and Tones (R) • S/T Reference Point (R)	• UCR Section 2.1.1 • UCR Section 2.3.1 • UCR Section 2.3.3 • UCR Section 2.3.5 • UCR Section 2.5.4.1.1 • UCR Section 2.5.4.1.2 • UCR Section 5.1 • UCR Section 5.2.1 • UCR Section 5.3.1 • UCR Section 5.5 • UCR Section 5.7.1.2.1
		Voice	• MOS (R) • Secure Calls (R)	• CJCSI 6215.01C • CJCSI 6215.01C
		Facsimile	• Analog: ITU-T T.4 (R)	• DISR
		Data	• Modem (VBD) (R) • 56 kbps switched data (R) • 64 kbps switched data (R: BRI only) • NX56 synchronous BER (R: BRI only) • NX64 synchronous BER (R: BRI only) • Secure data (STE/STU-III) (R)	• CJCSI 6215.01C • UCR Section 3.10 • UCR Section 3.10 • UCR Section 3.10 • UCR Section 3.10 • CJCSI 6215.01C
		VTC	• ITU-T H.320 (R: BRI only)	• FTR 1080B-2002
SUT Voice Mail Interfaces				
Interface	**Critical**	**Requirements Required or Conditional**		**References**
2 Wire Digital Proprietary	No	• TIA/EIA-470-B (C) • ROUTINE precedence only in accordance with UCR, Section 3.3 (R)		• UCR A7.5 .2 • UCR 3.3

Table 2. SMEO Requirements (continued)

Automated Call Distributor Interfaces			
Interface	**Critical**	**Requirements Required or Conditional**	**References**
2 Wire Digital Proprietary	No	• TIA/EIA-470-B (C) • ROUTINE precedence only in accordance with UCR, Section 3.3 (R)	• UCR A7.5 .2 • UCR 3.3
DSN Features & Capabilities			
Feature/ Capability	**Critical**	**Requirements Required or Conditional**	**References**
Common Features	Yes	• Individual Lines (R) • Selective call rejection (C) • Denied originating service (C) • Code restriction and diversion (R) • Call waiting (R) • Three-way calling (R) • Add-on transfer, conference calling, and call hold (C) • Call Transfer Individual – All calls (R) • Call Transfer - Internal Only (R) • Call Transfer – Individual – Incoming Only/Add-On Consultation Hold – Incoming Call (R) • Call Transfer – Outside (R) • Call Transfer – Add-On Restricted Station (C) • Call Transfer – Attendant (C) • Call Hold (R) • Conference Calling – Six Way Station Controlled (C) • Call forwarding Variable (R) • Call Forward Busy Line (R) • Call Forwarding – Don't Answer – All Calls (R) • Selective Call Forwarding (C) • Call pick-up (C) • Address Translation (C) • Assured Dial Tone (R)	• UCR Section 2.1 • UCR Section 2.1.2 • UCR Section 2.1.3 • UCR Section 2.1.4 • UCR Section 2.1.5 • UCR Section 2.1.6 • UCR Section 2.1.7 • UCR Section 2.1.7.1 • UCR Section 2.1.7.2 • UCR Section 2.1.7.3 • UCR Section 2.1.7.4 • UCR Section 2.1.7.5 • UCR Section 2.1.7.6 • UCR Section 2.1.7.7 • UCR Section 2.1.7.8 • UCR Section 2.1.8.1 • UCR Section 2.1.8.2 • UCR Section 2.1.8.3 • UCR Section 2.1.8.4 • UCR Section 2.1.9 • UCR Section 2.7 • UCR Section 2.9
Attendant	No	• Attendant Features (C)	• UCR Section 2.2
Public Safety	Yes	• Basic Emergency Service (911) Caller (R) • Emergency Service (911) Public Safety Answering Point (C) • Enhanced Emergency Service (E911) (R) • Trace of terminating calls (R) • Outgoing call trace (R) • Tandem call trace (R) • Trace of a call in progress (R)	• UCR Section 2.4.1.1 • UCR Section 2.4.1.2 • UCR Section 2.4.1.3 • UCR Section 2.4.2 • UCR Section 2.4.3 • UCR Section 2.4.4 • UCR Section 2.4.5
Conferencing	Yes	• Preset Conferencing (C) • Meet-Me Conferencing (R) • Progressive Conferencing (C)	• UCR Section 2.6. • UCR Section 2.6.2 • UCR Section 2.6.3
Nailed-up Connections	No	• Nailed-Up Connection (C)	• UCR Section 2.8
DSN Hotline Services	Yes	• DSN Analog Hotline Service (R)	• UCR Section 2.12

Table 2. SMEO Requirements (continued)

DSN Features & Capabilities			
Feature/ Capability	**Critical**	**Requirements Required or Conditional**	**References**
MLPP	Yes	• MLPP Overview (R) • Preemption in the Network (R) • Network Facility with Lower Precedence Calls (R) • Cancel to / Cancel from (C) • Network Facility with Equal or Higher Precedence Calls (R) • MLPP Trunk Selection (R) • Hunt Sequence for Trunks (R) • ROUTINE Precedence Calls (R) • Precedence Calls Above ROUTINE Precedence (R) • Method 1 (R) • Method 2 (C) • MLPP Internetworking with other Networks (R) • Precedence Call Diversion (R) • Channel Associated Signaling (R) • Primary Rate Interface (R) • Common Channel Signaling Number 7 (C) • Analog Line MLPP (R) • ISDN MLPP Basic Rate Interface General Description (R) • Single B Channel, Single Appearance, Single DN (R) • Line Active with a Lower Precedence Call (R) • Line Active with a Equal or Higher Precedence Call (R) • Single B Channel, Multiple Appearances, Single DN (C) • Two B Channels, Multiple Appearances, Single DN (C) • Two B Channel, Two DN (Data Mode Only) (R) • ISDN Primary Rate Interface (R) • Precedence Call Waiting (R) • Call Forwarding (R) • Call Transfer (R) • Call Hold (R) • Three-Way Calling (R) • Call Pickup (C) • Conferencing (C) • Multiline Hunt Group (C) • Community of Interest (R) • MLPP Common Channel Signaling Number 7 (C) • CAS to CCS Trunk Network in a Mixed Media Network (C) • MLPP Interaction with EKTS features (C)	• UCR Section 3.1 • UCR Section 3.2 • UCR Section 3.2.1 • UCR Section 3.2.1.1 • UCR Section 3.2.2 • UCR Section 3.2.3 • UCR Section 3.2.3.1 • UCR Section 3.2.3.1.1 • UCR Section 3.2.3.1.2 • UCR Section 3.2.3.1.2.1 • UCR Section 3.2.3.1.2.2 • UCR Section 3.2.4 • UCR Section 3.3 • UCR Section 3.4.1 • UCR Section 3.4.2 • UCR Section 3.4.3 • UCR Section 3.5 • UCR Section 3.6.1 • UCR Section 3.6.2 • UCR Section 3.6.2.1 • UCR Section 3.6.2.2 • UCR Section 3.6.3 • UCR Section 3.6.4 • UCR Section 3.6.5 • UCR Section 3.7 • UCR Section 3.8.1 • UCR Section 3.8.2 • UCR Section 3.8.3 • UCR Section 3.8.4 • UCR Section 3.8.5 • UCR Section 3.8.6 • UCR Section 3.8.7 • UCR Section 3.8.8 • UCR Section 3.8.9 • UCR Section 3.9 • UCR Section 3.10 • UCR Section 3.11

Table 2. SMEO Requirements (continued)

DSN Features & Capabilities			
Feature/ Capability	**Critical**	**Requirements Required or Conditional**	**References**
Call Processing	Yes	• Call Treatments (R) • Primary and Alternate Routing (R) • E&M Lead Signaling States (C) • 4-Wire Analog User Access Lines (C) • 2-Wire User Access Lines (R) • Termination of Analog Lines (R) • DSN Interswitch Trunk Call Processing (NON-CCS/ISDN) (R) • DSN User Dialing (R) • Interswitch and Intraswitch Dialing (R) • Seven-Digit Dialing (R) • Ten-Digit Dialing (R) • Access Code (R) • Access Digit (R) • Precedence Digit (R) • Service Digit (R) • Route Code (R) • Area Code (R) • Switch Code (R) • Line Number (R) • Calling Name Delivery (C) • Calling Number Delivery (R) • Emergency Service 911 Conflict Resolution (R) • DSN Switch Outpulsing Digit Formats (C) • Standard Directory Number (R) • Standard Test Numbers (C) • Base Services – Abbreviated Numbers (R) • Digit Reception Requirements (R) • Digit Registration Capacity (R) • Screening (R)	• UCR Section 4.1 • UCR Section 4.2 • UCR Section 4.3.1 • UCR Section 4.3.2 • UCR Section 4.3.3 • UCR Section 4.3.4 • UCR Section 4.4 • UCR Section 4.5.1.1 • UCR Section 4.5.1.2 • UCR Section 4.5.1.2.1 • UCR Section 4.5.1.2.2 • UCR Section 4.5.1.3 • UCR Section 4.5.1.3.1 • UCR Section 4.5.1.3.2 • UCR Section 4.5.1.3.3 • UCR Section 4.5.1.4 • UCR Section 4.5.1.5 • UCR Section 4.5.1.6 • UCR Section 4.5.1.7 • UCR Section 4.5.1.8.1 • UCR Section 4.5.1.8.2 • UCR Section 4.5.1.9 • UCR Section 4.5.2 • UCR Section 4.5.3 • UCR Section 4.5.4 • UCR Section 4.5.5 • UCR Section 4.5.6 • UCR Section 4.5.7 • UCR Section 4.5.8
Network Management	Yes	• Interfaces (R) • Data Quality (R) • Traffic Measurements (R) • Reference Data (C) • Line Servicing (C) • Trunk Groups (C) • Call Processors (C) • Switch Services (C) • Special Studies (C) • Remote Switching Studies (C) • Features (C) • Common Channel Signaling Network Measurements (C) • ISDN Measurements (C) • Traffic Capacity (R) • Fault management (R) • Configuration management (R) • Call Detail Recording Data Retention (C) • Performance management (R) • Network Management controls (C) • Remote access (R)	• UCR Section 9.1 • UCR Section 9.2.1 • UCR Section 9.2.2.1.1 • UCR Section 9.2.2.1.2 • UCR Section 9.2.2.2 • UCR Section 9.2.2.3 • UCR Section 9.2.2.4 • UCR Section 9.2.2.5 • UCR Section 9.2.2.6 • UCR Section 9.2.2.7 • UCR Section 9.2.2.8 • UCR Section 9.2.3 • UCR Section 9.2.4 • UCR Section 9.2.5 • UCR Section 9.3 • UCR Section 9.4 • UCR Section 9.5.2 • UCR Section 9.6 • UCR Section 9.7 • UCR Section 9.8

Table 2. SMEO Requirements (continued)

DSN Features & Capabilities (continued)				
Feature/ Capability	**Critical**	**Requirements Required or Conditional**		**References**
ISDN Services	Yes	• BRI Access, Call Control and Signaling (R) • Uniform Interface Configuration for BRIs (R) • Electronic Key Telephone Systems (EKTS) (C) • PRI Access, Call Control and Signaling (R) • PRI Features (R) • Packet Data Features and Capabilities (C)		• UCR Section 10, Table 10-1 • UCR Section 10, Table 10-2 • UCR Section 10, Table 10-3 • UCR Section 10, Table 10-4 • UCR Section 10, Table 10-5 • UCR Section 10, Table 10-6
Synchronization	Yes	• External Timing Mode (C) • Line timing mode (R) • General (C) • Internal Stratum 4 (R) • Synchronization Performance Monitoring Criteria (C) • DS1 Traffic Interfaces (C) • DS0 Traffic Interconnects (C)		• UCR Section 11.1.1.1 • UCR Section 11.1.1.2 • UCR Section 11.1.2.1 • UCR Section 11.1.2.2 • UCR Section 11.2 • UCR Section 11.3 • UCR Section 11.4
Reliability (See note 1.)	Yes	• Reliability Requirements (R) • Backup Power (R) • Power Components (R) • UPS Requirements (R) • UPS Load Capacity (R) • Backup Power (Environmental) (R) • Alarms (R)		• UCR Section 12.1 • UCR Section 12.3 • UCR Section 12.3.1 • UCR Section 12.3.2 • UCR Section 12.3.2.1 • UCR Section 12.3.3 • UCR Section 12.3.4
Security	Yes	• GR-815, STIGs, and DoDI 8510.bb (DIACAP) (R)		• UCR Section 13
VoIP				
VoIP System	No	VoIP function is conditional. If VoIP is provided, **all** of the following requirements must be met: • Voice Quality with MOS of 4.0 or better (R) • ITU-T G.711 PCM CODEC (R) • MLPP • Security (R) • Network management (R) • System timing (R) • Latency ≤ 60 milliseconds (R) • IPv6 capable (R) • Service Class Tagging (R) • VoIP System Downtime (IP network 35 min/yr Subscriber 12 min/yr) (R)		• UCR App. 3, para. A3.2.1 • UCR App. 3, para. A3.2.2 • UCR App. 3, para. A3.2.3 • UCR App. 3, para. A3.2.4 • UCR App. 3, para. A3.2.5 • UCR App. 3, para. A3.2.6 • UCR App. 3, para. A3.2.7 • UCR App. 3, para. A3.2.8 • UCR App. 3, para. A3.2.9 • UCR App. 3, para. A3.2.10
Network Gateways				
Interface	**Critical**	**Requirements Required or Conditional**		**References**
PSTN (See note 2.)	Yes	Trunking	• Positive Identification Control (C) • On-Netting (C) • Off-Netting (C) • Ground Start Line (R) • Immediate Start (C) • Delay Dial (C)	• CJCSI 6215.01C • CJCSI 6215.01C • CJCSI 6215.01C • UCR Section 5.2.2 • UCR Section 5.3.2 • UCR Section 5.3.4
Tactical (See note 3.)	No	Trunking	• Trunk Groups (C) • Call Processing (C)	• UCR Section 2.5.5 & 2.5.6 • UCR Section 4
		Voice	• MLPP (C) • Secure calls (C)	• UCR Section 3 • CJCSI 6215.01C
		Facsimile	• Analog: ITU-T T.4 (C)	• DISR

NOTES:
1 Backup power, power components, UPS requirements, UPS load capacity and alarms are non-testable requirements. It is the responsibility of the respective base/post/camp/station communication agency to provide this with the SUT when installed.
2 Voice, facsimile, data, and VTC service requirements for PSTN are identical to DSN with the exception of MLPP.
3 Data and VTC services are not provided via the DSN to tactical interface.

Table 2. SMEO Requirements (continued)

LEGEND:

2W	2-Wire	FTR 1080B-2002	Video Teleconferencing Services	PCM-24	Pulse Code Modulation - 24 Channels
ANSI	American National Standards Institute	G.711	Standard for PCM of Voice Frequencies	PCM-30	Pulse Code Modulation - 30 Channels
BER	Bit Error Ratio	GR	Generic Requirement (Telcordia)	PRI	Primary Rate Interface
BRI	Basic Rate Interface	GR-815	Generic Requirements For Network Element/Network System (NE/NS) Security	PSTN	Public Switched Telephone Network
C	Conditional	H.320	Standard for Narrowband VTC	Q.735.3	SS7 Signaling Standard for E1 MLPP
CAS	Channel Associated Signaling	IP	Internet Protocol	Q.955.3	ISDN Signaling Standard for E1 MLPP
CCS	Common Channel Signaling	IPv6	Internet Protocol version 6	R	Required
CJCSI	Chairman of the Joint Chiefs of Staff Instruction	ISDN	Integrated Services Digital Network	SMEO	Small End Office
CODEC	Coder/Decoder	IT	Information Technology	SS7	Signaling System 7
DIACAP	DoD Information Assurance Certification and Accreditation Process	ITU-T	International Telecommunication Union - Telecommunication Standardization Sector	STE	Secure Terminal Equipment
DISR	DoD IT Standards Registry	kbps	kilobits per second	STIGs	Security Technical Implementation Guides
DoD	Department of Defense	Mbps	Megabits per second	STU-III	Secure Telephone Unit – 3rd Generation
DoDI	Department of Defense Instruction	MFR1	Multi-Frequency Recommendation 1	S/T	ISDN BRI 4-wire interface
DP	Dial Pulse	min	minute	T1	Digital Transmission Link Level 1 (1.544 Mbps)
DN	Directory Number	MLPP	Multi-Level Precedence and Preemption	T.4	Standardization of Group 3 facsimile terminals for document transmission
DS0	Digital Signal Level 0 (64 kbps)	MOS	Mean Opinion Score	T1.619a	SS7 and ISDN Signaling Standard for T1
DS1	Digital Signal Level 1 (1.544 Mbps) (2.048 Mbps European)	NI 1/2	National ISDN Standard 1 or 2	TIA	Telecommunications Industry Association
DSCP	Differentiated Services Code Point	NX56	Data format restricted to multiples of 56 kbps	TIA/EIA-470-B	Performance and Compatibility Requirements for Telephone Sets with Loop Signaling
DSN	Defense Switched Network	NX64	Data format restricted to multiples of 64 kbps	UCR	Unified Capabilities Requirements
DTMF	Dual Tone Multi-Frequency	para	paragraph	UPS	Uninterruptible Power Supply
E&M	Ear and Mouth	PBX	Private Branch Exchange	VBD	Variable bit data
E1	European Basic Multiplex Rate (2.048 Mbps)	PCM	Pulse Code Modulation	VoIP	Voice over Internet Protocol
EIA	Electronic Industries Alliance			VTC	Video Teleconferencing
EKTS	Electronic Key Telephone System			yr	year
FTR	Federal Telecommunications Recommendation				

5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at https://stp.fhu.disa.mil. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at http://jit.fhu.disa.mil (NIPRNet), or http://199.208.204.125 (SIPRNet). Information related to DSN testing is on the TSSI website at http://jitc.fhu.disa.mil/tssi.

6. The JITC point of contact is Oskar Widecki, DSN 879-5269, commercial (520) 538-5269, FAX DSN 879-4347, or e-mail to oskar.widecki@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The tracking number for the SUT is 0815801.

FOR THE COMMANDER:

Enclosure a/s

for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

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Joint Interoperability Test Command, Liaison, TE3/JT1
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Department of the Army, Office of the Secretary of the Army, DA-OSA CIO/G-6 ASA (ALT), SAIS-IOQ
U.S. Marine Corps MARCORSYSCOM, SIAT, MJI Division I
DOT&E, Net-Centric Systems and Naval Warfare
U.S. Coast Guard, CG-64
Defense Intelligence Agency
National Security Agency, DT
Defense Information Systems Agency, TEMC
Office of Assistant Secretary of Defense (NII)/DOD CIO
U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities Division, J68
Defense Information Systems Agency, GS23

ADDITIONAL REFERENCES

(c) Joint Interoperability Test Command, Memo, JTE, "Special Interoperability Test Certification of Nortel Communication Server (CS) 1000E Software Release 5.0 and Product Enhancement Packages," 15 January 2008

(d) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Nortel Communication Server (CS) 1000E Release 5.0 (Tracking Number 0815801)," 24 September 2008

(e) Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6215.01C, "Policy for Department of Defense Voice Services with Real Time Services (RTS)," 9 November 2007

(f) Defense Information Systems Agency, "Department of Defense Networks Unified Capabilities Requirements," 21 December 2007

(g) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006